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HAMILTON, BROOK, SMITH & REYNOLDS, P.C.
530 VIRGINIA ROAD
P.O. BOX 9133
CONCORD, MA 01742-9133

EXAMINER	
NOGUEROLA, ALEXANDER STEPHAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/600,177	BARRINGER ET AL.	
	Examiner	Art Unit	
	ALEX NOGUEROLA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/12/2008 (restriction response)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-52* is/are pending in the application.

4a) Of the above claim(s) *1-26 and 53-66* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/19/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *IDS of 01/21/05 and IDS of 01/07/04*.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 27 and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Virtanen et al. US 6402,919 B1 ("Virtanen").

Addressing claim 27, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, “Operation of the entire apparatus can be controlled by means of a micro-processor.”). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Addressing claim 52, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

means for providing a liquid source in fluid communication via an inlet chamber (7) to an end of a capillary electrophoresis column (1) fixedly coupled to the inlet chamber (Figure 1; col. 03:15-31 and col. 03:38-44) means for converting and executing operational input and responsively controlling flow of the liquid source to the inlet chamber to provide a liquid sample in a controlled manner to the end of the capillary electrophoresis column (implied by col. 03:36-37, which states, “Operation of the entire apparatus can be controlled by means of a micro-processor.”); and

means for performing the capillary electrophoresis (col. 01:36-41 and col. 03:06-12). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 28-34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen") in view of Nikiforov et al. US 7,060,171 B1 ("Nikiforov").

Addressing claim 28, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable

instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the executable instructions are compiled software. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the executable instructions be compiled software because then the instructions are in a form that can be altered (reprogrammed) to adapt them to changes in the apparatus or conditions under which the apparatus are to be used. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 29, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the executable instructions are unchangeable. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the executable instructions be unchangeable because then there is no risk of the controller accidentally changing the sampling procedure between runs. This is useful, for example, for repetitive runs are made for statistical analysis. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer

programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 30, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the executable instructions conform to a known industry standard. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to do so because then the electrophoresis results will be more useful as it can be more fairly compared to results obtained by others who use instructions conform to industry standards. Indeed, it may be necessary to have the executable instructions conform to a known industry standard for quality control reasons or government regulations concerning drug quality control or environmental analysis. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 31, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the operational input includes declarative software instructions. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the operational input includes declarative software instructions because then the user can specify what certain operational parameters should be without having to worry about how the controller will achieve the specified parameter values. An underlying procedural software will take of achieving the specified parameter values. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 32, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, “Operation of the entire apparatus can be controlled by means of a micro-processor.”). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the executable instructions convert the operational input by interpreting program instructions. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the

executable instructions convert the operational input by interpreting program instructions because then the user of the apparatus will not have to worry about how the controller will implement the operational input. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 33, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the operational input is modifiable independent of the executable instructions. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the operational input be modifiable independent of the executable instructions because this will allow the operator of the apparatus to alter some of the operational parameters to adjust for a change in circumstances, such as the need to use a larger or smaller sample volume than previously used. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 34, Virtanen discloses an apparatus for performing capillary

electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the controller includes an interface to receive the operational input from an external system. However, it would have been obvious to one with ordinary skill in the art to do so because then the controller can automatically adjust operating parameters based on measurement data. . It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just

applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 36, Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by

col. 03:36-37, which states, “Operation of the entire apparatus can be controlled by means of a micro-processor.”). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the executable instructions include correspondence between predetermined indicators in the operational input and the input valve. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to do so because then the volume of sample introduced into the capillary can be controlled.

7. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 (“Virtanen”) in view of Nikiforov et al. US 7,060,171 B1 (“Nikiforov”) as applied to claims 28-34, 36 above, and further in view of Li et al. US 6,375,819 B1 (“Li”) .

Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results. Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention whether the controller includes an interface to receive the operational input from an external system. Additionally, Virtanen does not mention using a network to couple the external system to the controller.

Li discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

a controller (404) coupled to a data processing system through a local area network so that they can communicate with each other. See the abstract and col. 19:19-33. This implies providing the controller with an interface to receive the operational input from an external system and teaches using a network to couple the external system to the controller.

It would have been obvious to one with ordinary skill in the art to provide the controller with an interface to receive the operational input from an external system and teaches using a network to couple the external system to the controller as disclosed by Li in the invention of Virtanen because then the controller can automatically adjust operating parameters based on measurement data.

8. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen") in view of Nikiforov et al. US 7,060,171 B1 ("Nikiforov") as applied to claims 28-34, 36 above, and further in view of Sarrine US 5,147,522 ("Sarrine").

Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the

inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, “Operation of the entire apparatus can be controlled by means of a micro-processor.”). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention having the executable instructions detect errors in the operational input.

Sarrine discloses an automatic electrophoresis apparatus and method. One of the operational inputs to the automation means is an input signal regarding the alignment of the sample source. The automation means is configured to detect an error in this signal. See col. 07:34-37 and col. 19:15-37. It would have been obvious to one with ordinary skill in the art to have the executable instructions detect errors in the operational input as taught by Sarrine in the invention of Virtanen because this is just applying a known technique to a known device ready for improvement to yield predictable results. Note that although Sarrine's electrophoresis apparatus handles gel

slabs and not capillaries the concept of detecting the error in the alignment of the sample source is still directly applicable to Virtanen.

9. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen") in view of Nikiforov et al. US 7,060,171 B1 ("Nikiforov") as applied to claims 28-34, 36 above, and further in view of Karger et al. US 5,348,633 ("Karger") or Särme et al. US 7,261,801 B2 ("Särme").

Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable

instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Although Virtanen discloses that the inlet chamber may be coupled to a hydraulic system including a pump and at least one valve (col. 03:15-19 and col. 03:39-44) Virtanen does not mention including rough and fine filters. Karger and Särme each teach filtering sample before it is introduced in an electrophoresis separation capillary. See in Karger col. 01:10-17 and col. 06:32-43 and in Särme see the abstract and col. 05:12-23. It would have been obvious to one with ordinary skill in the art to provide filtering means as taught by Karger or Särme in the invention of Virtanen because this is just applying a known technique to a known device ready for improvement to yield predictable results. Filtering the sample will improve electrophoresis separation, resolution, and detection by removing substances that would otherwise interfere with analyte separation and detection.

10. Claims 39, 40, 49, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen").

Addressing claim 39, Virtanen discloses a method for performing capillary electrophoresis (abstract),

comprising:

providing a liquid source (R1 or R2 or R3) in fluid communication via an inlet chamber (7) to an end of a capillary electrophoresis column (1) fixedly coupled to the inlet chamber (Figure 1). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not specifically mention "in response to converting and executing operational input, controlling flow of the liquid source to the inlet chamber to provide a liquid sample in a controlled manner to the end of the capillary electrophoresis column." However, it would have been obvious to one with ordinary skill in art at the time of the invention to do so because Virtanen states, "Operation of the entire apparatus can be controlled by means of a micro-processor." See col. 03:45-50.

Addressing claim 40, Virtanen's use of a micro-processor implies at least executing executable machine language instructions.

Addressing claim 49, Virtanen does not mention determining correspondence between predetermined indicators in the operational input and a device used to control the flow of the liquid source. However, it would have been obvious to one with ordinary

skill in the art at the time of the invention to do so because then the volume of sample introduced into the capillary can be controlled.

Addressing claim 51, Virtanen discloses that the inlet chamber may be coupled to a hydraulic system including a pump and at least one valve (col. 03:15-19 and col. 03:39-44)

11. Claims 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen") as applied to claims 39, 40, 49, and 51 above, and further in view of Nikiforov et al. US 7,060,171 B1 ("Nikiforov").

Addressing claim 41, Virtanen does not mention whether the executable instructions are compiled software. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the executable instructions be compiled software because then the instructions are in a form that can be altered (reprogrammed) to adapt them to changes in the apparatus or conditions under which the apparatus are to be used. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 42, Virtanen does not mention whether the executable instructions are unchangeable. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the executable instructions be unchangeable because then there is no risk of the controller accidentally changing the sampling procedure between runs. This is useful, for example, for repetitive runs are made for statistical analysis. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 43, Virtanen does not mention whether the executable instructions conform to a known industry standard. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to do so because then the electrophoresis results will be more useful as it can be more fairly compared to results obtained by others who use instructions conform to industry standards. Indeed, it may be necessary to have the executable instructions conform to a known industry standard for quality control reasons or government regulations concerning drug quality

control or environmental analysis. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 44, Virtanen does not mention whether the operational input includes declarative software instructions. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the operational input includes declarative software instructions because then the user can specify what certain operational parameters should be without having to worry about how the controller will achieve the specified parameter values. An underlying procedural software will take of achieving the specified parameter values. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 45, Virtanen does not mention whether the executable instructions convert the operational input by interpreting program instructions. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the executable instructions convert the operational input by interpreting program instructions because then the user of the apparatus will not have to worry about how the controller will implement the operational input. It should be noted in this regard that as shown by Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

Addressing claim 46, Virtanen does not mention whether the operational input is modifiable independent of the executable instructions. However, it would have been obvious to one with ordinary skill in the art at the time of the invention to have the operational input be modifiable independent of the executable instructions because this will allow the operator of the apparatus to alter some of the operational parameters to adjust for a change in circumstances, such as the need to use a larger or smaller sample volume than previously used. It should be noted in this regard that as shown by

Nikiforov it was known at the time of the invention to use an appropriately programmed computer to instruct a controller in a microchannel electrophoresis system. See col. 08:05-14. Barring a contrary showing Applicant is just applying a known technique (computer programming techniques) to a known device (Virtanen's device) for improvement to yield predictable results.

12. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen") as applied to claims 39, 40, 49, and 51 above, and further in view of Li et al. US 6,375,819 B1 ("Li") .

Virtanen discloses a method for performing capillary electrophoresis (abstract), comprising:

providing a liquid source (R1 or R2 or R3) in fluid communication via an inlet chamber (7) to an end of a capillary electrophoresis column (1) fixedly coupled to the inlet chamber (Figure 1). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not specifically mention "in response to converting and executing operational input, controlling flow of the liquid source to the inlet chamber to provide a liquid sample in a controlled manner to the end of the capillary electrophoresis column." However, it would have been obvious to one with ordinary skill in art at the time of the invention to do so because Virtanen states, "Operation of the entire apparatus can be controlled by means of a micro-processor." See col. 03:45-50.

Virtanen does not mention whether converting and executing operational input includes receiving operational input from an external systems, such as by interfacing to an external system via a network.

Li discloses an apparatus for performing capillary electrophoresis (abstract), comprising:

a controller (404) coupled to a data processing system through a local area network so that they can communicate with each other. See the abstract and col. 19:19-33. This implies providing the controller with an interface to receive the operational input from an external system and teaches using a network to couple the external system to the controller.

It would have been obvious to one with ordinary skill in the art to provide the controller with an interface to receive the operational input from an external system and teaches using a network to couple the external system to the controller as disclosed by Li in the invention of Virtanen because then the controller can automatically adjust operating parameters based on measurement data.

13. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen et al. US 6402,919 B1 ("Virtanen") as applied to claims 39, 40, 49, and 51 above, and further in view of Sarrine US 5,147,522 ("Sarrine").

Virtanen discloses an apparatus for performing capillary electrophoresis (abstract),

comprising:

an inlet chamber (7);

a capillary electrophoresis column (1) with one end fixedly coupled to the inlet chamber (Figure 1);

a liquid source (R1 or R2 or R3) coupled to the inlet chamber through an input valve (shown, but not labeled in Figure 1, immediately underneath each reservoir R1, R2, and R3) to supply a liquid sample in a controlled manner to the inlet chamber (col. 03:45-50); and

a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column (implied by col. 03:36-37, which states, "Operation of the entire apparatus can be controlled by means of a micro-processor."). Also note alternative embodiment shown in Figure 2 and discussed in col. 03:51 – col. 04:39.

Virtanen does not mention having the executable instructions detect errors in the operational input.

Sarrine discloses an automatic electrophoresis apparatus and method. One of the operational inputs to the automation means is an input signal regarding the alignment of the sample source. The automation means is configured to detect an error in this signal. See col. 07:34-37 and col. 19:15-37. It would have been obvious to one with ordinary skill in the art to have the executable instructions detect errors in the operational input as taught by Sarrine in the invention of Virtanen because this is just applying a known technique to a known device ready for improvement to yield predictable results. Note that although Sarrine's electrophoresis apparatus handles gel slabs and not capillaries the concept of detecting the error in the alignment of the sample source is still directly applicable to Virtanen.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Alex Noguerola/
Primary Examiner, Art Unit 1795
August 13, 2008